

Date: Monday, 10/22/2007 3:40:44 PM  
 User: Kim Johnston

## Process Sheet

50

Customer	: CU-DAR001 Dart Helicopters Services	Drawing Name	: 350/355 AS X-TUBE AFT UNDER REVIEW
Job Number	: 35277	Part Number	: D350748201
Estimate Number	: 12486	Drawing Number	: N/A UNDER REVIEW
P.O. Number	:	Project Number	: N/A
This Issue	: 10/22/2007 S.O. No. :	Drawing Revision	: N/A
Prsht Rev.	: NC	Material	:
First Issue	: / / Type : LANDING GEAR	Due Date	: 12/15/2007 Qty: 1 Um: Each
Previous Run	: 35276		
Written By	:		
Checked & Approved By	:		
Comment	: Est Rev: A New Issue 06-07-05 JLM		
	: Est Rev: B Update qty of MS21042L5 06-09-12 KJ		

## Additional Product

Job Number:



Seq. #:	Machine Or Operation:	Description :
---------	-----------------------	---------------

1.0	DC	DOCUMENT CONTROL
-----	----	------------------



Comment: Photocopy bluefile & type labels per PPPD350-748-201	CHG001
---------------------------------------------------------------	--------

2.0	35277A	X-TUBE AS 350/355 HI AFT UNDER REVIEW
-----	--------	---------------------------------------



Comment: Sub-Component X-TUBE AS 350/355 HI AFT
D350-748-241 B 35277A

3.0	PACKAGING 1	PACKAGING RESOURCE #1
-----	-------------	-----------------------



Comment: PACKAGING RESOURCE #1
Pick Packing Kit

4.0	D35001	350 SADDLE
-----	--------	------------



Comment: Qty.: 4.0000 Each(s)/Unit	Total : 4.0000 Each(s)
350 SADDLE	
Batch: 31934 1K	32203 3P

5.0	D35011	BUSHING
-----	--------	---------



Comment: Qty.: 16.0000 Each(s)/Unit	Total : 16.0000 Each(s)
BUSHING	
Batch: 35782	

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Date: Monday, 10/22/2007 3:40:44 PM  
User: Kim Johnston

## Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: 350/355 AS X-TUBE AFT UNDER REVIEW

Job Number: 35277

Part Number: D350748201

Job Number:



Seq. #:

Machine Or Operation:

Description :

6.0

AN46A

Bolt



Comment: Qty.: 16.0000 Each(s)/Unit Total : 16.0000 Each(s)

Bolt

Batch: M105810

7.0

AN441A

bolt



Comment: Qty.: 8.0000 Each(s)/Unit Total : 8.0000 Each(s)

bolt

Batch: M105940

8.0

AN532A

Bolt



Comment: Qty.: 4.0000 Each(s)/Unit Total : 4.0000 Each(s)

Bolt

Batch: M105408

9.0

AN960JD416

Washer



Comment: Qty.: 32.0000 Each(s)/Unit Total : 32.0000 Each(s)

Washer

Batch: M106277

10.0

AN960JD516

Washer



Comment: Qty.: 8.0000 Each(s)/Unit Total : 8.0000 Each(s)

Washer

Batch: M106654

11.0

MS21042L4

Nut



Comment: Qty.: 24.0000 Each(s)/Unit Total : 24.0000 Each(s)

Nut

Batch: M105938

12.0

MS21042L5

Nut



Comment: Qty.: 4.0000 Each(s)/Unit Total : 4.0000 Each(s)

Nut

Batch: M106277

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: D Date: 08/03/14  
 QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Date: Monday, 10/22/2007 3:40:44 PM  
User: Kim Johnston

## Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: 350/355 AS X-TUBE AFT UNDER REVIEW

Job Number: 35277

Part Number: D350748201

Job Number:



Seq. #:

Machine Or Operation:

Description :

13.0

QC4

INSPECT 100% KITS FOR COMPLETENESS



Comment: INSPECT 100% KITS FOR COMPLETENESS

08/03/12 (1)

14.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

Identify and pack for shipping as per PPP D350-748-201

Location: A

PPP Rev: A

08/03/12 (1)

15.0

QC21

FINAL INSPECTION/W/O RELEASE



Comment: FINAL INSPECTION/W/O RELEASE

08/03/14 (1)

Job Completion



2008/3/13 (1)

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Date: Monday, 10/22/2007 3:40:51 PM  
 User: Kim Johnston

## Process Sheet

50

Customer : CU-DAR001 Dart Helicopters Services	Drawing Name : X-TUBE AS 350/355 HI AFT UNDER REVIEW
Job Number : 35277A	
Estimate Number : 12483	
P.O. Number :	Part Number : D350748241
This Issue : 10/22/2007 S.O. No. :	Drawing Number : D350-748-241 <i>Rev.1</i> <i>07.10.27</i>
Prsht Rev. : NC	Project Number : N/A
First Issue : 11 - Type : LANDING GEAR	Drawing Revision : <i>✓</i>
Previous Run : 35276A	Material :
Written By :	Due Date : 12/15/2007 Qty: 1 Um: Each
Checked & Approved By : <i>07.10.23</i>	
Comment : Est Rev: A New Issue 06-07-05 JLM	
Est Rev: B Update cadplate process 06-09-12 KJ	

## Additional Product

Job Number:



Seq. #:	Machine Or Operation:	Description :
---------	-----------------------	---------------

1.0	DC	DOCUMENT CONTROL
-----	----	------------------



Comment: DOCUMENT CONTROL

Photocopy bluefile and create labels as per PPP D350-748-241 CHG001 *la*

2.0	D6018125	Crosstube Material
-----	----------	--------------------



Comment: Qty.: 1.0000 Each(s)/Unit Total: 1.0000 Each(s)

Crosstube Material

D6018-125

2.299" OD X 2.000" ID

Batch: *B27472**S.F 07/11/04*

3.0	MORI SEIKI	MORI SEIKI CNC LATHE LARGE
-----	------------	----------------------------



Comment: MORI SEIKI CNC LATHE LARGE

1-Fill tube with sand &amp; install plugs on both ends as per Folio FA647

2-Turn first side as per Folio FA647

3-Deburr &amp; Inspect for surface damage. Repair damage within limits as per Dwg D350-748-241.

*S.F 07/11/04*

4.0	QC1	INSPECT ALL DIM TO DIM SHEET
-----	-----	------------------------------



Comment: INSPECT ALL DIM TO DIM SHEET

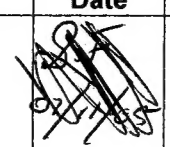
*S.F 07/11/04*

# Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			
07/11/08	30.	On first side I change Insert on Tools #3. and They have made a hole that is 0.01" diameter size R.C operator error.						

NOTE: Date & initial all entries



Date: Monday, 10/22/2007 3:40:52 PM  
User: Kim Johnston

## Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: X-TUBE AS 350/355 HI AFT UNDER REVIEW

Job Number: 35277A

Part Number: D350748241

Job Number:



Seq. #:

Machine Or Operation:

Description :

5.0

MORI SEIKI

MORI SEIKI CNC LATHE LARGE



Comment: MORI SEIKI CNC LATHE LARGE

1-Turn second side as per Folio FA647

2-Deburr & Inspect for surface damage. Repair damage within limits as per Dwg D350-748-241.

3-Scribe part # as per Dwg D350-748-241

2F 07/11/05

6.0

QC1

INSPECT ALL DIM TO DIM SHEET



Comment: INSPECT ALL DIM TO DIM SHEET

2F 07/11/05

7.0

QC8

SECOND CHECK



Comment: SECOND CHECK

2F 07-11-05

8.0

LANDING GEAR 1

LANDING GEAR RESOURCE 1



Comment: LANDING GEAR RESOURCE 1

Remove all Machining Marks

DP 7-11-6

9.0

OUTSIDE SERV.10

OUTSIDE SERVICES -LG



Comment: Sub-Contracting OUTSIDE SERVICES

Issue P/O: 5031

CL07111130

Heat Treat to min 180 KSI As per Dwg D350-748-241

Sand Blast tube after Heat Treat

Possible Supplier: Vac Aero

Ensure Certificate of Conformity is attached

10.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

Receive & Inspect For Transit Damage

Ensure certificate of conformity is attached

7/12/11 50(12)

11.0

QC6

DIMENSIONAL CHECK



Comment: DIMENSIONAL CHECK

6 07 12/12

**Dart Aerospace Ltd**

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

Date: Monday, 10/22/2007 3:40:52 PM  
User: Kim Johnston

## Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: X-TUBE AS 350/355 HI AFT UNDER REVIEW

Job Number: 35277A

Part Number: D350748241

Job Number:



Seq. #:

Machine Or Operation:

Description :

12.0

HAND FINISHING1

HAND FINISHING RESOURCE #1



Comment: HAND FINISHING RESOURCE #1  
Oil inside of tube with LPS-3.

NIA

A/R LPS-3 Batch: \_\_\_\_\_

13.0

BENDING

BENDING MACHINE



Comment: BENDING MACHINE

Bend tube as per Dwg D350-748-241 using CNC bender program D350A and Folio FT \_\_\_\_\_ EL 7-12-98

14.0

QC15

DIMENSIONAL CHECK OF X-TUBES



Comment: DIMENSIONAL CHECK OF X-TUBES

14-12-18 (1)

15.0

LANDING GEAR 1

LANDING GEAR RESOURCE 1



Comment: LANDING GEAR RESOURCE 1

1-Remove all marks from tube within limits of D350-748-241

2-Drill Tube as per Dwg D350-748-241 Using DT8876 Drill Jigs,  
Set-up drill table as per QSI 010

3-Deburr

4-Engrave Part # and Batch # as per Dwg D350-748-241

SR PTO 7-12-20

AWM 07-12-24

16.0

QC6

DIMENSIONAL CHECK



Comment: DIMENSIONAL CHECK

ENGINEERING APPROVAL 08/01/22

08/01/22

17.0

OUTSIDE SERV.10

OUTSIDE SERVICES -LG



Comment: Sub-Contracting OUTSIDE SERVICES

Issue P/O: 5510

Stress relief at 375° for 5 hours

Magnetic Particle Inspect per ASTM E1444

Cadium Plate per AMS-QQ-P-416B, Class 1, Type 2

Embrittle relief at 375° for 8 hours, Chromate Treat

Possibe Supplier: Southwest United Industries

Ensure Certificate of Conformity is attached

08/01/23 (1)

# Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: D350-748-241 PAR #: N/A Fault Category: Prod/Landing Gear NCR: Yes No DQA: 22 Date: 08/03/14  
 QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR: <u>08-012</u>		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			
07-12-18	15.0	Tube is slightly in-even, and low @ 31.25.	<i>[Signature]</i> 08.01.21 PCV DS1042	cut side B per dim sheet. & check drill cuffs @ .680 to make tube nominal height.	SR 7-12-20	side "B" only 08.01.22	<i>[Signature]</i> 08.01.21 PCV DS1042	<i>[Signature]</i> 08-12-18
08.01.28	15.2	During inspection it was found that the hole alignment on the cuff is off by 0.040" R.C. Humman error	<i>[Signature]</i> 08.01.21 PCV DS1042	OPEN AWES IN CUFF WITH 0-DRILL. TEST ASSEMBLE TUBE AND GET ENG APPROVAL	EL 4-1-22	<i>[Signature]</i> 08.01.22	<i>[Signature]</i> 08.01.21 PCV DS1042	<i>[Signature]</i> 08.01.28
08.01.21	15.	hole location on cuff is higher than 0.780. from center to edge R.C. Humman	<i>[Signature]</i> 08.01.22 PCV DS1042	Grind Base of cuff to obtain Dim. of 0.780"	AWM 08-01-22	<i>[Signature]</i> 08.01.22	<i>[Signature]</i> 08.01.22 PCV DS1042	<i>[Signature]</i> 08.01.22

NOTE: Date & initial all entries

see ncr 08-012

Date: Monday, 10/22/2007 3:40:52 PM  
User: Kim Johnston

## Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: X-TUBE AS 350/355 HI AFT UNDER REVIEW

Job Number: 35277A

Part Number: D350748241

Job Number:



Seq. #:

Machine Or Operation:

Description:

18.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1  
Receive & Inspect For Transit Damage  
Ensure certificate of conformity is attached

8/3/4 (1)

19.0

QC5

INSPECT WORK TO CURRENT STEP



Comment: INSPECT WORK TO CURRENT STEP

8 0803/04 (10)

20.0

SPRAY PAINTING

SPRAY PAINTING



Comment: SPRAY PAINTING

1-Prime inside crosstube as per QSI 005 4.2

08 03 05

2-Paint Outside of Tube as per Dart QSI 005 4.2

ml 08 03 06 (1)

21.0

QC14

INSPECT SPRAY PAINT



Comment: Inspect Spray Paint  
Then, Wrap in plastic bag to protect from scratches

0803-07 (1)

22.0

D35021

SUPPORT



Comment: Qty.: 2.0000 Each(s)/Unit Total : 2.0000 Each(s)  
SUPPORT  
Batch: 32205

ml 08 03 07

23.0

D2856400

Abrasion Strip



Comment: Qty.: 1.2401 f(s)/Unit Total : 1.2401 f(s)  
Abrasion Strip 7.10" long x2  
Batch: 35900

ml 08 03 07

24.0

ALS41032225

Insert



Comment: Qty.: 1.0000 Each(s)/Unit Total : 1.0000 Each(s)  
Insert  
Batch: 100485 100489

ml 08 03 07

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Date: Monday, 10/22/2007 3:40:52 PM  
User: Kim Johnston

## Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: X-TUBE AS 350/355 HI AFT UNDER REVIEW

Job Number: 35277A

Part Number: D350748241

Job Number:



Seq. #:

Machine Or Operation:

Description :

25.0

AN960JD10

Washer



Comment: Qty.: 1.0000 Each(s)/Unit Total : 1.0000 Each(s)

Washer

Batch: 105442

ml 08 03 07

26.0

MS2192020

Clamp (per MIL-DTL-8783C)



Comment: Qty.: 2.0000 Each(s)/Unit Total : 2.0000 Each(s)

Clamp (per MIL-DTL-8783C)

Batch: 103478

ml 08 03 07

27.0

MS27039110

Screw



Comment: Qty.: 1.0000 Each(s)/Unit Total : 1.0000 Each(s)

Screw

Batch: 18836

ml 08 03 07

28.0

LANDING GEAR 1

LANDING GEAR RESOURCE 1



Comment: LANDING GEAR RESOURCE 1

1-Install Ground wire Insert, then insert screw and washer

2-Install Abrasion strips as per Dwg D350-748-241 & QSI 035.

3-Install supports Using Dt8876 as per Dwg D350-748-241, Torque to 60-80 IN-LBS

ml 08 03 07

29.0

QC5

INSPECT WORK TO CURRENT STEP



Comment: INSPECT WORK TO CURRENT STEP

08/03/10 @

30.0 \*

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

Identify and pack for shipping as per PPP D350-748-241

Location:

PPP Rev: PPA 35277

10/8/12

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes ☒ No ☐ DQA: ☒ Date: 08/03/14  
 QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries



Date: Monday, 10/22/2007 3:40:52 PM  
User: Kim Johnston

## Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: X-TUBE AS 350/355 HI AFT UNDER REVIEW

Job Number: 35277A

Part Number: D350748241

Job Number:



Seq. #:

Machine Or Operation:

Description :

31.0

QC21

FINAL INSPECTION/W/O RELEASE



Comment: FINAL INSPECTION/W/O RELEASE

2008/03/14

Job Completion



mi 2008/3/13

1

**Dart Aerospace Ltd**

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

<b>DART AEROSPACE LTD</b>	<b>Work Order:</b> 35277A
<b>Description:</b> Crosstube Assembly (AS350/355 High Aft)	<b>Part Number:</b> D350-748-241
<b>Inspection Dwg:</b> D350-748-241 Rev: D	<b>Page 1 of 1</b>

### FIRST ARTICLE INSPECTION CHECKLIST

☒ First Article
 ☐ Prototype

Inspection Sheet Drawing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
SIDE A	2.240	+0.005/-0.000	2.242	✓		
	2.180	+0.005/-0.000	2.182	✓		
	2.180	+0.005/-0.000	2.182	✓		
	2.208	+0.005/-0.000	2.210	✓		
	2.234	+0.005/-0.000	2.236	✓		
	2.253	+0.005/-0.000	2.256	✓		
	2.272	+0.005/-0.000	2.272	✓		
	2.299	+0.005/-0.000	2.300	✓		
	0.063	+/-0.010	.063	✓		
	4.26	+/-0.030	4.26	✓		
	R0.063	+/-0.010	.063	✓		
	R0.50	+/-0.030	.508	✓		
SIDE B	2.240	+0.005/-0.000	2.240	✓		
	2.180	+0.005/-0.000	2.180	✓		
	2.180	+0.005/-0.000	2.180	✓		
	2.208	+0.005/-0.000	2.208	✓		
	2.234	+0.005/-0.000	2.239			
	2.253	+0.005/-0.000	2.252			
	2.272	+0.005/-0.000	2.271			
	2.299	+0.005/-0.000	2.298	✓		
	0.063	+/-0.010	.063	✓		
	4.26	+/-0.030	4.26	✓		
	R0.063	+/-0.010	.063	✓		
	R0.50	+/-0.030	.500	✓		
	122.70	+/-0.060	122.700	✓		

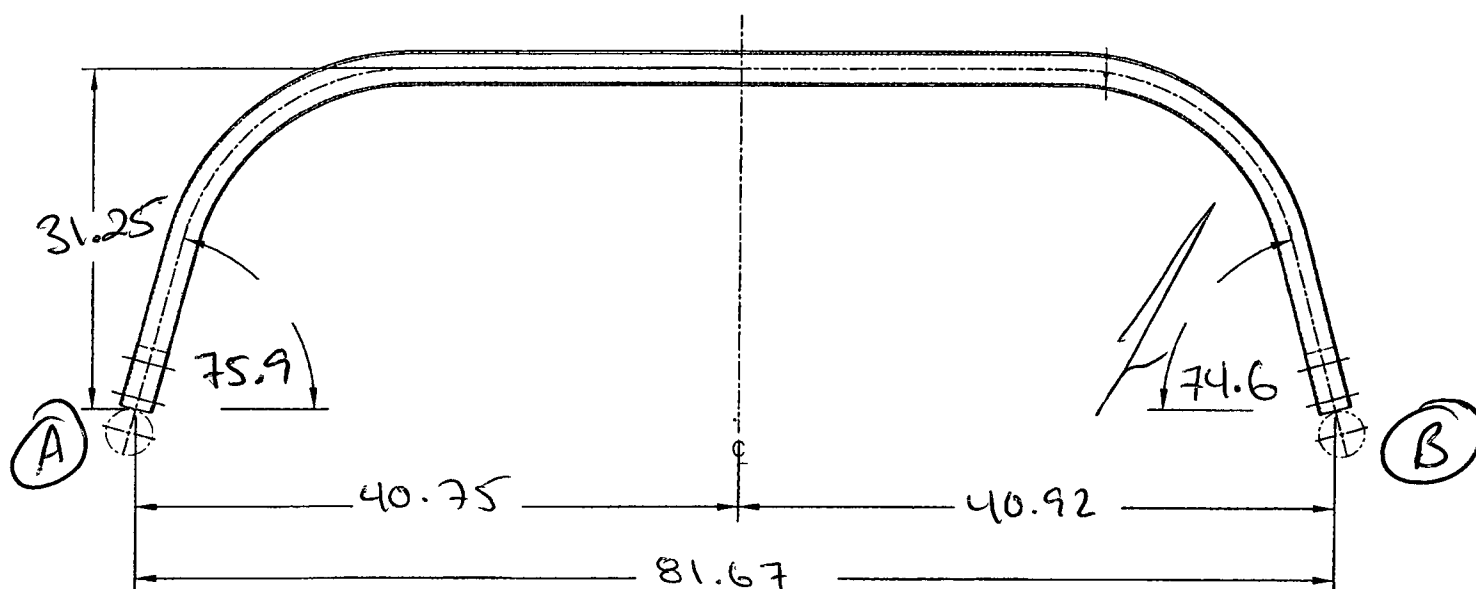
<b>Measured by:</b> J.F.	<b>Audited by:</b> J.F.	<b>Prototype Approval:</b>	N/A
<b>Date:</b> 02/11/04	<b>Date:</b> 02/11/05	<b>Date:</b>	N/A

Rev	Date	Change	Revised by	Approved
A	07.01.17	New Issue (P/O D350-748-201)	KJ/JLM	



DART AEROSPACE LTD		Work Order:	35277A
Description: Crosstube High Aft (AS350/355)		Part Number:	D350-748-201
Inspection Dwg: D350-748-241 Rev: D		Page 1 of 1	

Required Dimension	Min	Max
Height	31.22	31.48
1/2 Span	40.77	41.03
Angle	75	77
Total Span	81.54	82.06



Comments
Side B was slightly higher than A by 0.200"
Cut cuff B to make height even.
drill cuffs to .680 to make to be nominal height.

QC15 Inspection	
Date	17-12-18

Rev	Date	Change	Revised by	Approved
A	07.02.06	New Issue	KJ/JM	



**DART****RELEASED**

06.10.31

DESIGN 90	DRAWN BY 90	<b>DART AEROSPACE LTD</b> HAWKESBURY, ONTARIO, CANADA	
CHECKED H	APPROVED H	DRAWING NO. D350-748-241	REV. D SHEET 1 OF 3
DATE 06.10.31		TITLE CROSSTUBE (AS 350/355 HI AFT)	SCALE NTS
A	06.03.31	NEW ISSUE	
B	06.06.30	ADD D6018-125 & PRIME AND PAINT	
C	06.08.14	ADD CAD PLATING	
D	06.10.31	MAG. PARTICLE AND CAD PLATE AS MFD.	

QTY	P/N	DESCRIPTION
X	D350-748-241	CROSSTUBE ASSEMBLY (AS 350/355 HI AFT)
1	D6018-125	CROSSTUBE (OR D6015-125)
2	D3502-1	SUPPORT
2	D2856-400-710	ABRASION STRIP
1	AELS-1032-225	INSERT
1	AN960JD10	WASHER
2	MS21920-20	CLAMP (PER DART SPEC. M-MS21920-20)
1	MS27039-1-10	SCREW

**D350-748-141 CROSSTUBE:**

- 1) MATERIAL: MANUFACTURED FROM D6018-125 OR D6015-125  
FINISHED LENGTH = 122.70±0.06
- 2) MACHINE PER MACHINING DETAIL ON PAGE 3. BLEND OUT ALL EDGES FROM MACHINING LONGITUDINALLY, TRANSITIONS SHOULD BE SMOOTH. NOTE: ALL HOLES ARE DRILLED AFTER BENDING.
- 3) SCRIBE DART PART NUMBER AND BATCH NUMBER IN THIS AREA WITH VIBRATING STYLUS
- 4) BEND PROGRESSIVELY WITH A MINIMUM OF 7 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D.
- 5) HEAT TREAT TO MIN. 180 KSI PER MIL-T-6736 OR AMS 2759-1C AFTER TURNING
- 6) FINISH: MAGNETIC PARTICLE INSPECT PER DART QSI 038 4.2  
CADMIUM PLATE PER AMS-QQ-P-416B, CLASS 1, TYPE II  
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2  
PAINT OUTSIDE PER DART QSI 005 4.2
- 7) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE. WHEN DRILLING HOLES EXTREME CARE MUST BE TAKEN AND CAREFUL DEBURRING PERFORMED TO ENSURE A CLEAN HOLE WITH NO CRACKING/CHIPPING/GROOVES.
- 8) INSTALL D2856-400-710 ABRASION STRIP WITH A GAP ON BOTTOM SIDE OF CROSSTUBE, CENTERED OPPOSITE D3502-1 SUPPORT, PER QSI 035.
- 9) TORQUE MS21920-20 CLAMPS 60 TO 80 IN-LB
- 10) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- 11) ALL DIMENSIONS ARE IN INCHES
- 12) PART IS SYMMETRIC ABOUT CENTERLINE EXCEPT FOR Ø0.297 HOLE.

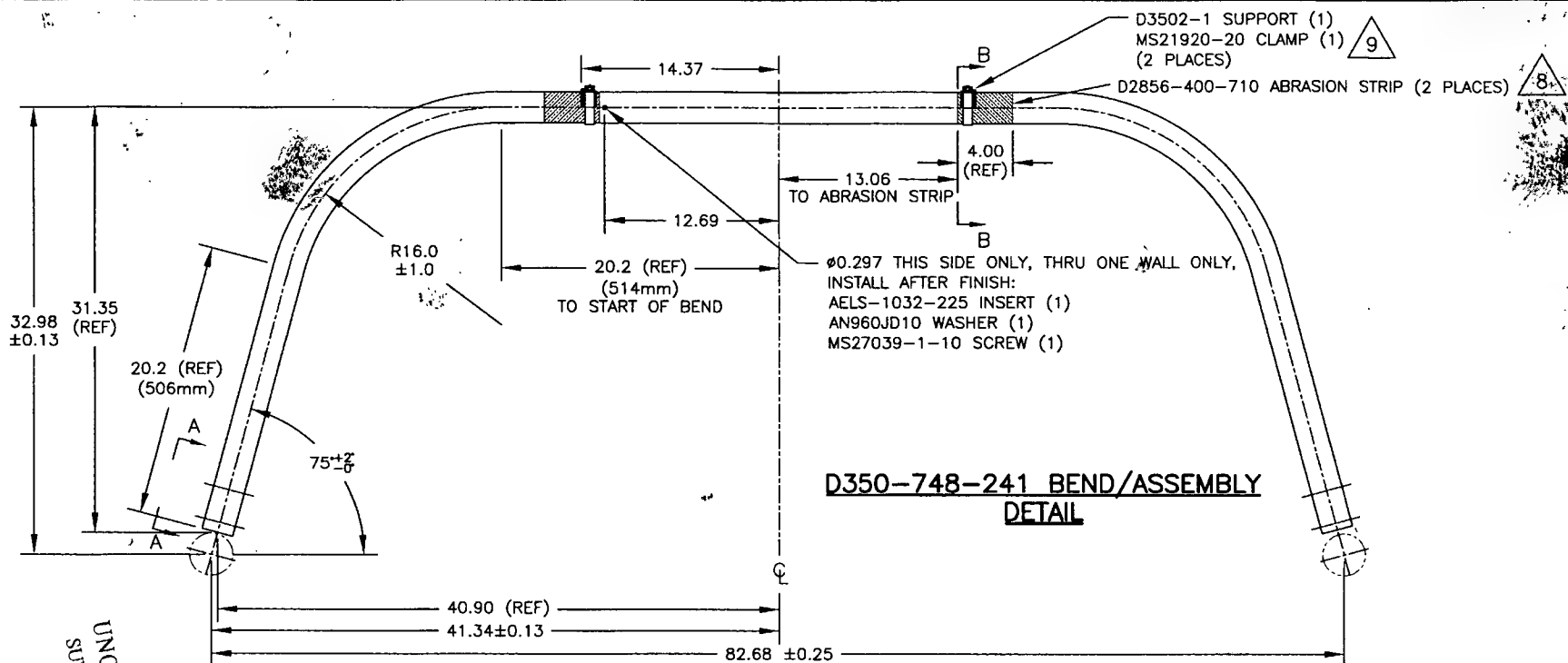
**UNDER REVIEW**07.02/16  
CUT FROM REDUCED  
OK 07.11.22

Copyright © 2006 by DART AEROSPACE LTD

THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.

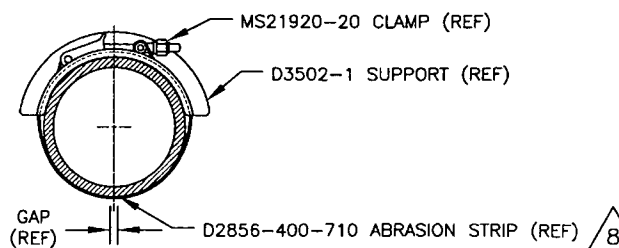




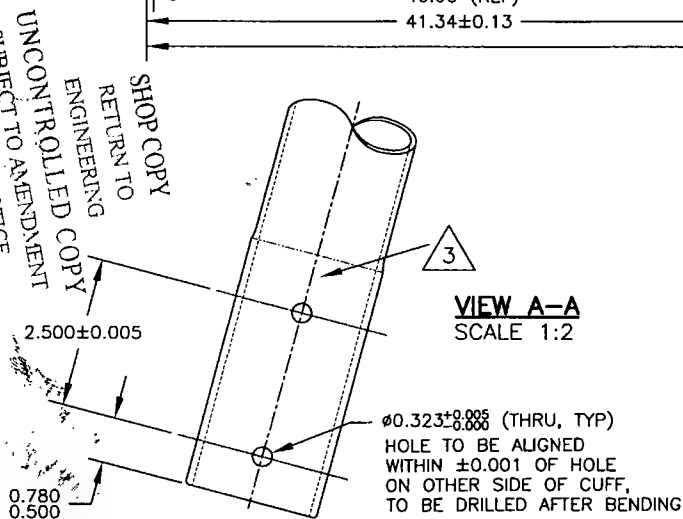


### D350-748-241 BEND/ASSEMBLY DETAIL

### SECTION B-B SCALE 1:2



### VIEW A-A SCALE 1:2



UNDER REVIEW

07.02/16.77  
CUFF FOR REVIEW  
06.10.31

RELEASED

06.10.31

COPYRIGHT © 2006 BY DART AEROSPACE LTD.

THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.

DESIGN *qp*

DRAWN BY *qp*

CHECKED *#*

APPROVED *#*

DATE 06.10.31

**DART**

DART AEROSPACE LTD.  
HAMPSHIRE, ENGLAND, CANADA

DRAWING NO.  
D350-748-241

TITLE  
CROSSTUBE (AS 350/355 HI AFT)

SCALE  
1:8

REV. D  
SHEET 2 OF 3



## Chris Provencal

---

**From:** David Shepherd [dshepherd@dartaero.com]  
**Sent:** January 21, 2008 5:20 PM  
**To:** 'Chris Provencal'  
**Cc:** 'Mike Petsche'  
**Subject:** RE: NCR D350-748-141/-241

Chris,

As per our discussions, your course of action as outlined below is acceptable to me. I agree ... an NCR must be raised to prevent this from happening in the future.

David

---

**From:** Chris Provencal [mailto:cprovencal@dartaero.com]  
**Sent:** Monday, January 21, 2008 2:36 PM  
**To:** 'David Shepherd'  
**Cc:** 'Mike Petsche'  
**Subject:** NCR D350-748-141/-241

David,

RE: The xtube cuff holes on several D350-748-141/-241 were misaligned by as much as 0.040". The misalignment is between the hole pattern on the inboard and outboard side of the cuffs, ie. The dimension from the bottom of the xtube to the center hole (0.500-0.780 on dwg) is different from inboard to outboard side.

We opened the holes on the worst-case xtube with a q-drill to 0.332 diam (dwg is p-drill or 0.323). The tubes could be assembled in a complete gear. He had to tap a few bolts through, but not nothing with any large amount of effort. We will assemble each affected tube and verify them.

The non-conforming xtube is the aft xtube in the attached picture. As this is an unusual deviation, we thought it best to ask for your opinion. Is this acceptable? An NCR has been initiated to figure out why this happened.

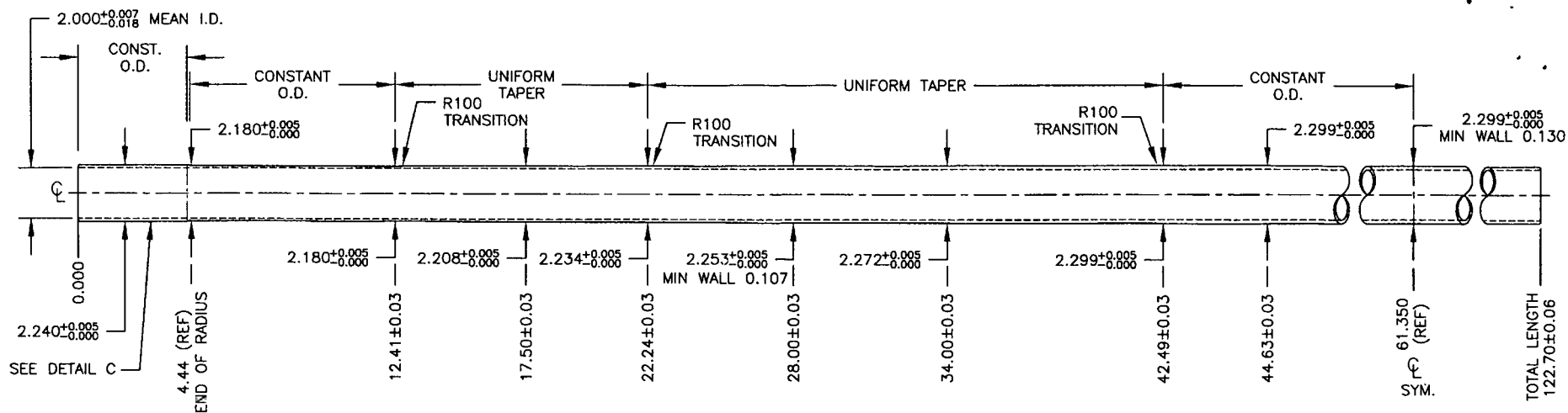
Thanks,  
-Chris

No virus found in this incoming message.  
Checked by AVG Free Edition.  
Version: 7.5.516 / Virus Database: 269.19.8/1235 - Release Date: 1/21/2008 9:39 AM

No virus found in this outgoing message.  
Checked by AVG Free Edition.  
Version: 7.5.516 / Virus Database: 269.19.8/1235 - Release Date: 1/21/2008 9:39 AM

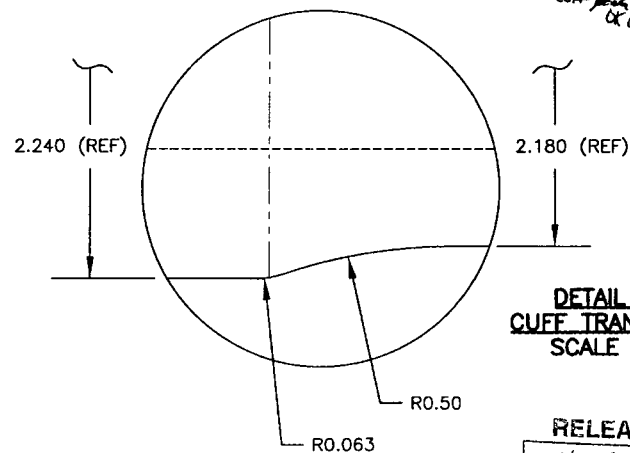
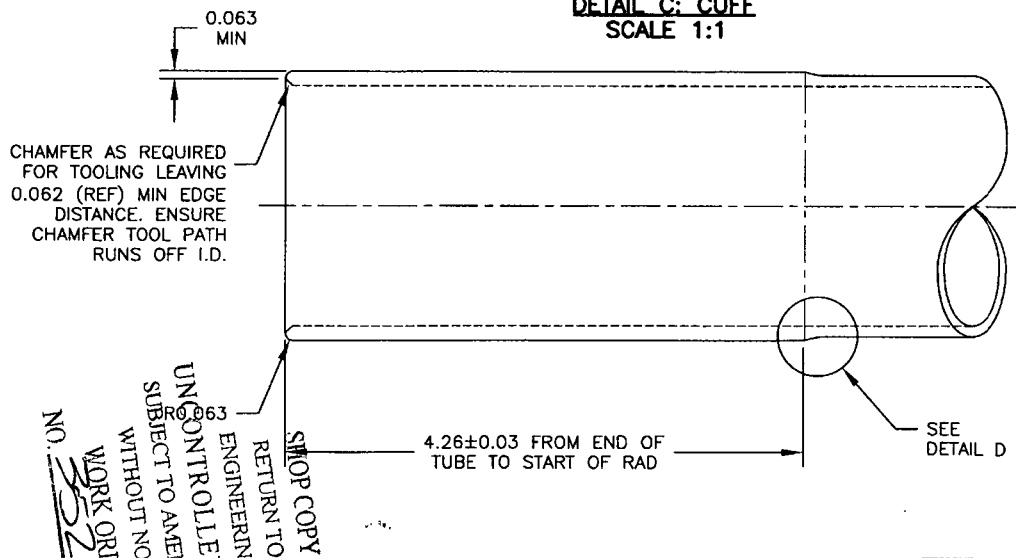
2008-01-22





### D350-748-241 MACHINING DETAIL

#### DETAIL C: CUFF SCALE 1:1



UNDER REVIEW

07.02/16/11  
CUFF PATH REVISED  
06.10.22

DETAIL D:  
CUFF TRANSITION  
SCALE 9:1

RELEASED

06.10.21

COPYRIGHT © 2006 BY DART AEROSPACE LTD.

THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.

DESIGN	q7	DRAWN BY	q7	<b>DART</b>	DART AEROSPACE LTD. WARRICK, ONTARIO, CANADA
CHECKED	#	APPROVED	#	DRAWING NO.	REV. 0
DATE	06.10.31			D350-748-241	SHEET 3 OF 3
				TITLE	SCALE
				CROSSTUBE (AS 350/355 HI AFT)	1:4

NO. 35277A  
WORK ORDER  
SUBJECT TO AMENDMENT  
WITHOUT NOTICE  
UNCONTROLLED COPY  
ENGINEERING  
STOP COPY  
RETURN TO





VAC AERO  
INTERNATIONAL INC.

RELEASE NOTE

GST No. : R105468102

OAK 92999-1

☒ HEAD OFFICE  
1371 SPEERS ROAD, OAKVILLE, ONTARIO  
CANADA L6L 2X5  
TEL: (905) 827-4171 FAX: (905) 827-7489

☐ 2009 WYECROFT ROAD, UNIT B  
OAKVILLE, ONTARIO  
CANADA L6L 6J4  
TEL: (905) 827-7377 FAX: (905) 827-1380

☐ QUEBEC DIVISION  
7450 RUE VÉRITÉ STREET, ST. LAURENT, QUÉBEC  
CANADA H4S 1C5  
TEL: (514) 334-4240 FAX: (514) 334-6269

12/06/2007

MM/DD/YYYY

PAGE : 1

BILL TO: 1DAR01  
DART AEROSPACE LTD.  
1270 ABERDEEN ST.  
HAWKESBURY, ON

SHIP TO: DART AEROSPACE LTD.  
1270 ABERDEEN ST.  
HAWKESBURY, ON

K6A 1K7

K6A 1K7

DATE SHIPPED	SHIP VIA	F.O.B.
12/06/2007		ORIGIN
CUSTOMER P/O No.	JOB No.	TERMS
POC0005031		COD

PART No.	DESCRIPTION	UOM	QTY ORD	QTY SHPD	TEST RESULTS
----------	-------------	-----	------------	-------------	--------------

D350-748

EA 8 8

Process Specifications: Procedure: 4353  
HEAT TREATED TO 180 KSI PER AMS 2759-1D  
100% HARDNESS TESTED AS PER ASTM E-18, HRC 40-45  
MATERIAL: 4130

ONE EACH OF:

D350-748-141B35272A, D350-748-141B35273A,  
D350-748-141B35274A, D350-748-141B35275A,  
D350-748-241B35276A, D350-748-241B35277A,  
D350-748-241B35278A, D350-748-241B35279A

NOTE: SAND BLAST TUBE AFTER HEAT TREAT

100% HARDNESS TESTED

8.000

42/43 HRC

DR



I hereby certify that the material covered by this release note has been inspected and tested and conforms to all specifications relevant thereto in accordance with the conditions of the contract / or purchase order.

ON BEHALF OF VAC AERO INTERNATIONAL INC.

*Donna Robinson*  
Authorized Q.C. Inspector



VACUUM BRAZING - HEAT TREATING - SPECIAL PROCESSING - FURNACE EQUIPMENT  
TURBINE COMPONENT OVERHAUL - PLASMA AND OTHER COATINGS



HEAT TREATING





**CERTIFICATE OF  
CONFORMANCE**

**CADORATH PLATING CO. LTD.  
2150 LOGAN AVENUE  
WINNIPEG, MANITOBA R2J-0J1**

**DATE:** Feb-28-2008

**CONIGNED TO:** Dart Aerospace Ltd.  
1270 Aberdeen St.  
Hawksbury, ON K6A 1K7

**W/O #:** 73544

**INVOICE #:** 38152

**CONTRACT OR  
PURCHASE ORDER # 5510**

**DESCRIPTION:** SKID

**QTY** 1

**P/N # D350748241**

**S/N # B35277**

**CADMIUM PLATE IAW AMS-QQ-P-416 TYPE 2 CLASS 1. MPI IAW  
ASTM-E-1444. BAKE HEAT CHART #8776 & #8884.**

**CERTIFICATE: I certify that the items indicated here on have  
been inspected and tested and conform to all specifications  
and requirements detailed on the contract or purchase order.**

**Approved Inspector:**

*William Maruszewski*

